Docket No.: 42390.P11010

AMENDMENTS TO THE CLAIMS

Listing of claims:

1. (Previously Presented) An optical amplifier comprising:

a device substrate;

a single-mode waveguide embedded in the device substrate, wherein the device substrate comprises a cladding surrounding the single-mode waveguide; and

a first plurality of lasers positioned to provide a first plurality of light beams substantially transverse to the single-mode waveguide, wherein each of the first plurality of lasers are spaced apart from one another along a length of the single-mode waveguide.

2. (Canceled).

3. (Previously Presented) The optical amplifier of claim 1 wherein the first plurality of lasers are vertical cavity surface emitting lasers.

4. (Original) The optical amplifier of claim 3 wherein the first plurality of lasers share a common substrate.

5. (Original) The optical amplifier of claim 4 wherein the vertical cavity surface emitting lasers are bonded to the device substrate.

6. (Original) The optical amplifier of claim 1 wherein the device substrate is a phosphate glass doped with Erbium.

7. (Original) The optical amplifier of claim 1 further comprising:

a second waveguide embedded in the device substrate; and

a second plurality of lasers positioned to provide a second plurality of light beams substantially transverse to the second waveguide.

8. (Original) The optical amplifier of claim 1, wherein the first plurality of lasers are evenly spaced apart from one another.

8. (Previously Presented) A method of amplifying an optical signal comprising:

directing the optical signal unidirectionally through a single-mode waveguide embedded in a substrate, the optical signal having a first direction of propagation; and

using a plurality of lasers to provide a plurality of light beams substantially transverse to the first direction of propagation, wherein the light beams pass through a cladding of the substrate and through the single-mode waveguide, and wherein the plurality of lasers are spaced apart from one another along a length of the single-mode waveguide.

10. (Canceled).

11. (Previously Presented) The method of claim 9, wherein the optical signal has a wavelength of approximately 1550 nm, and the plurality of light beams has a wavelength of approximately 980 nm.

12. (Original) The method of claim 11, wherein the applying the plurality of light beams further comprises:

using a plurality of lasers each using less than 50 m W of power.

13. (Original) The method of claim 11, wherein the applying the plurality of light beams further comprises:

using a plurality of lasers each using less than 20 m W of power.

14. (Previously Presented) The method of claim 9 further comprising:

reflecting the plurality of light beams back at the single-mode waveguide after passing through the single-mode waveguide.

15. (Previously Presented) A method of making an optical signal amplifier comprising:

attaching a plurality of light sources to a surface of a substrate, the substrate having a waveguide embedded within, wherein a cladding surrounds the waveguide, and wherein the plurality of light sources are directed substantially transverse to the waveguide.

16. (Original) The method of claim 15, wherein the attaching of the plurality of light sources comprises:

bonding a plurality of vertical cavity surface emitting lasers to the surface of the substrate.

17. (Original) The method of claim 16, wherein each of the plurality of vertical cavity surface emitting lasers is spaced apart in a line on a common semiconductor substrate.

18. (Original) The method of claim 16, wherein each of the plurality of vertical cavity surface emitting lasers is spaced apart by a constant distance.

19. (Original) The method of claim 16, wherein the plurality of vertical cavity surface emitting lasers each operate at less than 50 m W.

20. (Original) The method of claim 16, wherein the plurality of vertical cavity surface emitting lasers each operate at less than 20 m W.

21. (Previously Presented) An optical amplifier comprising:

a substrate;

a single-mode waveguide embedded within the substrate, wherein a cladding substantially surrounds the waveguide, the waveguide having a primary direction of propagation;

an array of lasers positioned to provide a plurality of pumped light beams transverse to the primary direction of propagation.

22. (Original) The optical amplifier of claim 21, wherein at least one of the array of lasers operates at less than 20 m W of power.

23. (Previously Presented) The optical amplifier of claim 7, wherein the first plurality of lasers are positioned to not provide the first plurality of light beams into the second waveguide.